

WHAT IS CLAIMED:

Sub
B1
1. In a network comprising a plurality of software controllable devices that
communicate over said network, said software controllable devices including or coupled to a
computer-readable storage medium, a distributed system for controlling said devices,
5 comprising:

at least one control object, said control object residing in said computer readable-
medium accessible to a respective software controllable device and including logical attributes
of said respective device, said control object accepting and issuing control messages to and
from said respective device; and

10 a user interface adapted to receive said control object, retrieve said logical attributes,
and accept and issue control messages to and from said control object, said user interface
residing in at least one of said software controllable devices,

wherein when said control object is enabled, said control object registers with said
distributed system, wherein said control object is active while said respective one of said
15 devices is functioning, and wherein said control object maintains a list of all other registered
control objects and their logical attributes.

Sub
C1
20 2. The system of claim 1, wherein said control object is adapted to bind to any
designed physical transport mechanism for communication with other control objects.

3. The system of claim 1, wherein said control object is adapted to be embedded in a
container application and executed within a wrapper executable.

sd
a
25 4. The system of claim 1, wherein said software controllable devices each include an
operating system, said operating system including application programming interfaces to
retrieve data from, and write data to, said control object, and

wherein said control object control object is polymorphic such that said control object is adapted to take on the logical attributes and command and control capabilities of any of said devices.

Sub C1 5
5. The system of claim 4, wherein said control object comprises a component object model (COM) object that exists within said operating system, said control object comprising a COM interface to access said operating system.

10 6. The system of claim 4, wherein said control object provides wrappers for exposed clients and enables use of method calls and exposed properties by said operating system or other application software program.

15 7. The system of claim 4, wherein said control object utilizes transport DLLs provided by said operating system for transporting data between said devices.

20 8. The system of claim 1, wherein said control object further comprises extensions, wherein said control object is adapted to logically and physically pass a control signal to said software controllable devices, and wherein said control object is adapted to send a message to one of an electronic controller and interface provided in said software controllable devices.

25 9. The system of claim 1, wherein a first registered control object is designated a manager object, said manager object performing list management to maintain and administer said list by periodically broadcasting said list to all registered control objects on said system.

10. The system of claim 9, wherein said list contains said logical attributes, an identifier and an address of all registered control objects on said system.

11. The system of claim 1, wherein said user interface is adapted to control said devices locally and to control said devices across said network.

12. The system of claim 11, wherein said user interface is adapted to control all of said devices functioning on said network via said control object.

13. The system of claim 11, wherein said user interface supplies a coherent and transparent interface across all network media and topologies, and wherein said user interface takes on the personality of said respective one of said physical devices for which said control object carries out logical and physical mapping and control responsibility.

14. The system of claim 1, wherein said respective one of said physical devices further comprises a display by which said respective one of said physical devices is controlled, and wherein said display is adapted to control others of said devices via said network and said control object.

15. In a system for controlling a plurality of software controllable devices represented by a plurality of control objects that maintain a list of logical attributes of respective ones of said devices, said control object accepting and issuing control messages to and from said respective ones of said devices, a method of registering said control objects, comprising:

broadcasting a control message from an enabled control object to inform other registered control objects that said enabled control object exists;
determining if said enabled control object is a first registered control object; and
appointing said first registered object as a manager object to administer said list.

16. The method as recited in claim 15, said manager object further:
sending said list to any new control object that registers with said system;
periodically broadcasting said list to all registered control objects; and

performing a synchronization to force all other control objects to synchronize to the said list.

17. The method as recited in claim 15, wherein said list contains an identifier and an
5 address for each registered control object on said system.

18. The method as recited in claim 15, further comprising performing an election if said manager object ceases to function, said election comprising:

10 promoting a second registered control object to said manager object;
promoting all other control objects up one position on said list; and
distributing said list to all registered control objects on said system.

19. The method as recited in claim 18, further comprising distributing said list to all registered control objects if any control object other than said manager object ceases to
15 function.

20. In a network comprising a plurality of software controllable devices that communicate over said network, said software controllable devices containing a computer-readable storage medium within which information is stored, a system for controlling said
20 devices, comprising:

a plurality of control objects residing in said computer-readable medium of respective ones of said software controllable devices, said control objects including logical attributes of said respective ones of said devices, said control objects further accepting and issuing control messages to and from said respective ones of said devices,

25 wherein said control objects register with said system and is active while said respective ones of said devices are functioning, and wherein said control objects maintain a list of all other registered control objects and their logical attributes.

Sub
B4

21. The system of claim 20, wherein said control objects are polymorphic such that said control objects are adapted to take on the logical attributes and command and control capabilities of any of said devices, and wherein said control objects are adapted to bind to any designed physical transport mechanism for communication with other control objects.

5

22. The system of claim 21, said control objects further comprising extensions wherein said control objects are adapted to logically and physically pass a control signal to said devices, and wherein said control objects are adapted so send a message to one of an electronic controller and interface provided in said devices.

10

23. The system of claim 20, wherein said software controllable devices comprise an operating system, said operating system including application programming interfaces to retrieve data from and write data to said control object.

15

24. The system of claim 20, wherein a first registered control object of said plurality of control objects is designated a manager object, said manager object performing list management to maintain and administer said list by periodically broadcasting said list to all registered control objects on said system, and wherein said list contains said logical attributes, an identifier and an address of all registered control objects on said system.

20

25. The system of claim 20, further comprising a user interface adapted to receive said control objects, retrieve said logical attributes, and accept and issue control messages to and from said control object, wherein said user interface is adapted to control said devices across said network and locally with respect to said respective one of said devices.

25

26. The system of claim 25, wherein said user interface supplies a coherent and transparent interface across all network media and topologies, and wherein said user interface

Sub
C11

takes on the personality of said respective one of said physical devices for which said control objects carry out logical and physical mapping and control responsibility.

Sub C1 27. The system of claim 20, wherein at least one of said physical devices further comprises a display by which said at least one of said physical devices is controlled, and wherein said display is adapted to control others of said devices via said network and said control objects.

28. In a network comprising at least one software controllable device that communicates over said network and is remotely controllable over said network, said software controllable device containing a computer-readable storage medium within which state information is stored, a system for controlling said device, comprising:

a control object residing in said computer-readable storage medium, said control object including said state information of said device, said control object further accepting and issuing control messages to and from said device,

wherein said control object registers with said system and is active while said device is functioning, and wherein said control object maintain a list of any other control object registered with said system and their logical attributes.

29. The system of claim 28, wherein said control object is polymorphic such that said control object is adapted to take on the logical attributes and command and control capabilities of any device attached to said network, and wherein said control object is adapted to bind to any designed physical transport mechanism for communication with other control objects.

25

30. The system of claim 29, said control object further comprising extensions wherein said control object is adapted to logically and physically pass a control signal to said device,

Sub
C1
and wherein said control object is adapted so send a message to one of an electronic controller and interface provided in said device.

31. The system of claim 28, further comprising a user interface adapted to receive said
5 control object, retrieve said logical attributes, and accept and issue control messages to and from said control object, wherein said user interface is adapted to control said devices across said network and locally with respect to said device.

32. The system of claim 31, wherein said user interface supplies a coherent and
10 transparent interface across all network media and topologies, and wherein said user interface takes on the personality of said physical device for which said control object carries out logical and physical mapping and control responsibility.